Spatial Data Analysis Network

Newsletter

SEPTEMBER 2004

SPAN's mission is to achieve excellence in the application of innovative spatial analysis in support of research, education and community outreach

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SPAN is a research support unit within the Division of Research and Graduate Training. It has offices at Thurgoona, Bathurst and Wagga Wagga campuses to provide postgraduate and staff research support in three main areas: remote sensing, Geographic Information Systems (GIS) and spatial statistics.

Manager's Message

Welcome to our new look SPAN newsletter. For those I've not met, I became SPAN's manager in July 2003 after spending most of my working life teaching science/computer studies at high school and running two businesses. These experiences, and my Grad Dip in GIS & Remote Sensing after completing an environmental sciences degree at CSU, led to my current position. To further my skills, I'll be completing a Master of Applied Science (GIS and Remote Sensing) next semester.

Since our last newsletter, Steven Gibbs, who has a social research background, has joined our staff at the Bathurst campus. With a Degree in Economics (Social Science) and experience in data analysis, survey design, project management as well as spatial data and GIS, his skills are well suited to assist researchers.

Our revamped newsletter includes a summary of some recent projects, significant changes to SPAN's hardware and software, the latest news on ABS data and a run-down on S-Plus and how researchers can learn more about this statistical analysis package. Enjoy.

Gail Fuller

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Can SPAN help you?

SPAN might be able to assist your research in ways you do not anticipate. From simple data retrieval and map making to complex spatial and statistical data analysis, SPAN is available to enhance the quality of your research. If you are a researcher, academic or postgraduate student at Charles Sturt University and believe that some aspect of your research might be assisted by using our skills, do not hesitate to contact your local SPAN representative.

Want to know more? Visit www.csu.edu.au/research/span

Environmental Projects

Goulburn Murray Water Channel Remodelling Project
The Johnstone Centre

11 km NW of Tongala Victoria, the Johnstone Centre was engaged by Goulburn Murray Water to undertake the environ-mental and social assessment of channel sections (CG No. 41/9 & CG No. 1/41/9) to highlight areas of environmental and social value. SPAN was involved in the GIS component of the project including mapping of native and introduced vegetation along a 3km section of the channel and mapping of buildings within one kilometre of the channel.

Parks Victoria Perceptions
Researcher: Bronwyn Grass, Honours Student

Bronwyn Grass is doing her honours on a study that will explore the perceptions of Parks Victoria held by the residents of the Mount Beauty community in north-east Victoria following the 2003 bushfires. The research will go beyond the findings of the recent Victorian Government Inquiry into the bushfires and identify what views and attitudes are present and important in the community. This research will also go beyond the fires and consider issues outside the Victorian State Government Inquiry. SPAN has been involved by making some location maps and finding population statistics for the area.

Historical Vegetation
Researcher: Robyn Whipp, PhD

Robyn Whipp's PhD (partly sponsored by the CRC for Plant-based Management of Dryland Salinity) is to study the historical vegetation changes in the Pilliga Forests of northern New South Wales. While it is accepted that Australia's landscape changed enormously after European settlement for agricultural and grazing purposes, Robyn will be exploring the claim that some areas have actually increased in vegetation density since settlement. SPAN has been involved in setting up GIS resources for her project so far.

Software/ Hardware

ArcGIS 9 Arrives at CSU!

ArcGIS 9 is the latest release of SPAN's main GIS software. Changes and additions to ArcGIS 9 include:

- New geoprocessing framework for modelling and scripting
- New spatial statistic tools
- Improved annotation and labelling
- Improved raster support
- GPS support
- New 3D whole earth visualisation
- 100 improved spatial analyst tools

Staff/researchers can access ArcGIS 9 by contacting their local SPAN staff to borrow software for installation.

Panasonic Toughbook

SPAN has purchased a Panasonic Tough-book, a toughened laptop for field trips. It runs Windows XP, Weighs less than 2 kg, has a 4–6 hour battery life, has a screen that is readable outdoors and can be converted to tablet format.

The Toughbook is available for short term loan for research field trips only, not for indoor typing! It is fairly popular, so you will need to book in advance. It is located at Wagga Wagga campus and can be sent to other campuses, but you will need to allow a couple of days for transfer. Please call Craig Poynter on 02 6933 2165 to arrange bookings.

Social Research

Data News

NEWS

CRSR and SPAN Enter Collaboration

In recent months SPAN has increased its emphasis on providing support to social research projects. SPAN now has an on-going arrangement with the Centre for Rural Social Research, located at CSU Wagga Wagga, to conduct survey data analysis and reporting for the Centre's external clients. In recent months SPAN has completed data analysis and reporting of an attitudes survey for CSU's Division of Facilities Management, an Equal Employment Opportunity survey for Bland Council and a survey of community attitudes regarding the economic, social and environmental effects of the Visy mill at Tumut. Shortly SPAN will complete a survey analysis report for Tumut Shire Council. SPAN's involvement in these projects begins with the receiving of the raw survey data in spreadsheet format and ends with the completing of a final report in Microsoft Word format that is issued directly to the client.
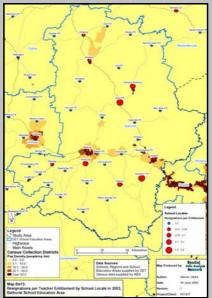
NVivo Added to SPAN's Skills

SPAN has added NVivo skills to its repertoire. NVivo is a software program, accessible to CSU staff via Thin Client on the Division of Information Technology website, that allows users to analyse detailed text documents such as interviews and focus group discussions. The Centre for Research and Graduate Training periodically run beginner and advanced courses in NVivo, and these courses are highly recommended for first time users. If you have any questions on how NVivo might enhance your research project, please contact Steven Gibbs on 02 6338 4676.

PROJECT UPDATE

Rural Teacher Education Project
Head Researcher: Professor Bill Green

The School of Teacher Education is collaborating with the University of New England and the NSW Department of Education and Training (DET) to investigate issues in rural and regional education, particularly regarding teacher retention in these areas. SPAN is assisting this three-year project, which is due to be completed by Easter 2005, by mapping relevant statistics (e.g. DET regions, school locations and size, census data and ARIA index) and drawing out spatial factors in educational issues (e.g. the relationship of distance to rates of teacher turnover or addressing issues of isolation in small school communities). For more information on this project visit: www.ruralteachereducation.net.au.

The above map shows the number of resignations per teacher entitlement for school locations in Bathurst School Education Area.

In March this year the Australian Bureau of Statistics released **National Regional Profiles** (NRP), a collection of selected statistics for various geographic boundary levels down to local government areas. Statistics include population, birth and death rates, socio-economic index, ARIA index, income support customers, building approvals and motor vehicle sales. NRPs can be downloaded free from the ABS website (http://www.abs.gov.au). SPAN can map this data if required.

Statistics on **Centrelink** customers (e.g. people on disability support pension or carers allowance) can now be purchased from Centrelink using the following email address: BI.Frontdoor@centrelink.gov.au. Cost is $100/hour to extract data and extraction takes approx. 2-3 hours, depending on the quantity of data requested. Statistics are available down to postcode level. SPAN can help with any data requests to Centrelink.

Don't forget that SPAN has the complete **Basic Community Profile** from the 1991, 1996 and 2001 census down to census collection district level. If you require census data, chances are that SPAN has it and can help you use it for your research project.

Can SPAN help you?

SPAN can assist your social research by using GIS, Microsoft Excel, S-Plus and NVivo on your projects. Contact us for further information on how we can help you.

Other Projects

Regional Transport Needs under Microscope

Researcher: Associate Professor Ian Gray (picture *CSU Billboard*, vol. 13:15)

Exploring the social, environmental and economic impact of rail services in regional NSW is the focus of a research project commissioned by the Local Government and Shires Associations of NSW that aims to provide a foundation for planning future regional public transport. The project's final report will be available at the Local Government Association annual conference in late October.

The Influence of Spatial Attributes on House Price

Researcher: Siti Amri, School of Information Technology

This study explores the application of agent-based modelling to the analysis and modelling of house price evolution in Bathurst. The investigation is based on a time series of 1992-2003 sales records and parcel data. The model predicts house price based on certain spatial at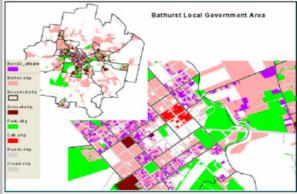tributes such as land values, local environment, census data, building approvals, zoning, rates and unemployment. GIS is an essential tool in linking these attributes and defining locations for input into the model.

Figure 6: Bathurst Study Area

Ankle Brachial Index

Researcher: Matthew Austin, Honours Student

Macro vascular and microvascular changes are common complications of cardiovascular disease affecting both vessels that service the heart and the peripheral vessels to the extremities. To assess the extent of vascular damage to the legs, the ankle brachial index (ABI) is routinely calculated using Doppler ultrasound in combination with a pressure cuff. This is currently the gold standard for assessing lower limb vasculature. Matthew Austin's honours projects is studying the concern among health professionals that results obtained from the ABI may be inaccurate. SPAN has assisted Matthew with statistics.

S-PLUS

What is S-Plus?

S-Plus is a powerful statistics package that is available from SPAN on application.
The latest version of S-Plus available from SPAN is S-Plus 6.2.

How can I learn to use S-Plus?

A one-day basic training course for postgraduate students and researchers will be held on Thursday 16th September 2004 at SPAN's Wagga Wagga laboratory. The course will cover:

- The S-PLUS interface
- S-PLUS data storage and compatibility
- Univariate analysis
- Multivariate analysis
- Scripting

To register for this course please contact Gail Fuller by email or on 02 6933 2004. An S-Plus training manual is also available at:
http://www.csu.edu.au/research/span/resources/training/splus6manual.zip

Are there advanced courses?

SPAN's Simon McDonald recently attended *Traditional and Modern Approaches to Statistical Modelling with S-PLUS*, a CSIRO-run course at Macquarie University. Simon writes: "I had the opportunity to hear S-PLUS guru, and world renowned statistician – Bill Venables – who taught the course. Among a dauntingly intelligent crowd I was exposed to three days of intense training in numerous modelling techniques such as GAMs, GLMs, Robust Linear Modelling, Mixed Effects modelling (linear and non-linear) and much, much more. As soon as I returned, I helped a student who went on to gain First Class Honours. I highly recommend attending any S-Plus courses run by CSIRO".